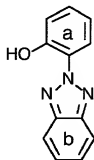


I claim:

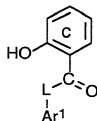
1. An optical filter which comprises a transparent support and a filter layer containing a dye and a binder polymer, wherein the dye is in an aggregated form exhibiting an absorption maximum in the wavelength region of 750 to 1,100 nm, and wherein the support, the filter layer or an optional layer contains a ultraviolet absorbing agent represented by the formula (I), (II), (III), (IV), (V), (VI), (VII) or (VIII):

(I)



in which the benzene rings a and b may have a substituent group;

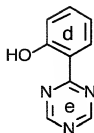
(II)



in which Ar<sup>1</sup> is an aryl group or an aromatic heterocyclic group, -L- is a single bond or -O-, and the benzene ring c may have a substituent group;

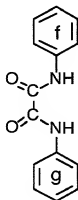
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(III)



in which the benzene ring d and the triazine ring e may have a substituent group, and the benzene ring d may be  
5 condensed with another aromatic ring or a heterocyclic ring;

(IV)



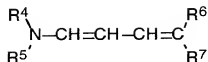
10 in which the benzene rings f and g may have a substituent group;

(V)



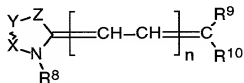
15 in which Ar<sup>2</sup> is an aryl group or an aromatic heterocyclic group; R<sup>1</sup> is hydrogen or an alkyl group; and each of R<sup>2</sup> and R<sup>3</sup> independently is cyano, -COR<sup>13</sup>, -COOR<sup>14</sup>, -CONR<sup>15</sup>R<sup>16</sup>, -SO<sub>2</sub>R<sup>17</sup> or -SO<sub>2</sub>NR<sup>18</sup>R<sup>19</sup>, wherein each of R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup> independently is hydrogen, an alkyl group, a substituted alkyl group or an aryl group, or R<sup>2</sup> and R<sup>3</sup> are combined to form a five-membered or six-membered ring;

(VI)



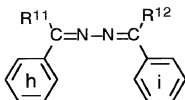
- in which each of R<sup>4</sup> and R<sup>5</sup> independently is hydrogen, an alkyl group or an aryl group, or R<sup>4</sup> and R<sup>5</sup> are combined to form a five-membered or six-membered ring; and each of R<sup>6</sup> and R<sup>7</sup> independently is cyano, -COR<sup>20</sup>, -COOR<sup>21</sup>, -CONR<sup>22</sup>R<sup>23</sup>, -SO<sub>2</sub>R<sup>24</sup> or -SO<sub>2</sub>NR<sup>25</sup>R<sup>26</sup>, wherein each of R<sup>20</sup>, R<sup>21</sup>, R<sup>22</sup>, R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup> and R<sup>26</sup> independently is hydrogen, an alkyl group, a substituted alkyl group or an aryl group, or R<sup>6</sup> and R<sup>7</sup> are combined to form a five-membered or six-membered ring;

(VII)



- in which R<sup>8</sup> is an alkyl group, a substituted alkyl group or an aryl group; each of R<sup>9</sup> and R<sup>10</sup> independently is cyano, -COR<sup>27</sup>, -COOR<sup>28</sup>, -CONR<sup>29</sup>R<sup>30</sup>, -SO<sub>2</sub>R<sup>31</sup> or -SO<sub>2</sub>NR<sup>32</sup>R<sup>33</sup>, wherein each of R<sup>27</sup>, R<sup>28</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup>, R<sup>32</sup> and R<sup>33</sup> independently is hydrogen, an alkyl group, a substituted alkyl group or an aryl group, or R<sup>9</sup> and R<sup>10</sup> are combined to form a five-membered or six-membered ring; -X-Y- is -CR<sup>34</sup>R<sup>35</sup>-CR<sup>36</sup>R<sup>37</sup>- or -CR<sup>38</sup>=CR<sup>39</sup>-, wherein each of R<sup>34</sup>, R<sup>35</sup>, R<sup>36</sup>, R<sup>37</sup>, R<sup>38</sup> and R<sup>39</sup> independently is hydrogen, an alkyl group or an aryl group, or R<sup>38</sup> and R<sup>39</sup> are combined to form a benzene or naphthalene ring; -Z- is -O-, -S-, -NR<sup>40</sup>-, -CR<sup>41</sup>R<sup>42</sup>- or -CH=CH-, wherein R<sup>40</sup> is an alkyl group, a substituted alkyl group or an aryl group, and each of R<sup>41</sup> and R<sup>42</sup> independently is hydrogen or an alkyl group; n is 0 or 1;

(VIII)



in which each of  $R^{11}$  and  $R^{12}$  independently is hydrogen, an alkyl group or an aryl group, or  $R^{11}$  and  $R^{12}$  are combined to form a five-membered or six-membered ring; the benzene rings h and i may have a substituent group; and the benzene rings h and i may be condensed with another aromatic ring or a heterocyclic ring.

2. The optical filter as defined in claim 1, where-  
in the ultraviolet absorbing agent is an o-substituted phenol represented by the formula (I), (II) or (III).

3. The optical filter as defined in claim 1, where-  
in the longest wavelength at which the ultraviolet absorb-  
ing agent has an absorption maximum is within the wave-  
length region of 300 to 390 nm.

4. The optical filter as defined in claim 1, where-  
in the ultraviolet absorbing agent has an absorption, at a  
wavelength of 50 nm longer than the longest wavelength at  
which the absorbing agent has an absorption maximum, of  
less than 10% of the absorption at the absorption maximum.

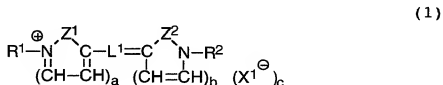
5. The optical filter as defined in claim 1, where-  
in the dye is a methine dye.

6. The optical filter as defined in claim 1, where-  
in the filter layer has the absorption maximum in each  
wavelength region of 750 to 850 nm, 851 to 950 nm, and 951  
to 1,100 nm.

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7. The optical filter as defined in claim 6, wherein the filter layer contains a dye exhibiting an absorption maximum in the wavelength region of 750 to 850 nm, a dye exhibiting an absorption maximum in the wavelength region of 851 to 950 nm, and a dye exhibiting an absorption maximum in the wavelength region of 951 to 1,100 nm.

8. The optical filter as defined in claim 7, wherein at least one of the dyes exhibiting an absorption maximum in the wavelength regions of 750 to 850 nm, 851 to 950 nm and 951 to 1,100 nm is a cyanine dye represented by the formula (1):

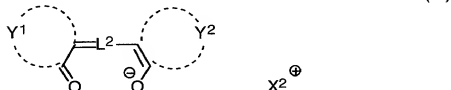


15 in which each of  $\text{Z}^1$  and  $\text{Z}^2$  independently is a non-metal atomic group forming a five-membered or six-membered nitrogen-containing heterocyclic ring which may be condensed; each of  $\text{R}^1$  and  $\text{R}^2$  independently is an aliphatic group or an aromatic group;  $\text{L}^1$  is a methine chain consisting of an add  
20 number of methines; each of a, b and c independently is 0 or 1; and  $\text{X}^1$  is an anion.

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9. The optical filter as defined in claim 7, wherein the dye exhibiting an absorption maximum in the wavelength region of 750 to 850 nm is an oxonol dye represented by the formula (2):

5



in which each of Y<sup>1</sup> and Y<sup>2</sup> independently is a non-metal atomic group forming an aliphatic ring or a heterocyclic ring; L<sup>2</sup> is a methine chain consisting of an add number of methines; and X<sup>2</sup> is a proton or a cation.

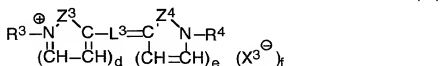
10

10. The optical filter as defined in claim 7, wherein the transmittance at the absorption maximum in each wavelength region of 750 to 850 nm, 851 to 950 nm and 951 to 1,100 nm is in the range of 0.01 to 30%.

15

11. The optical filter as defined in claim 1, wherein the optical filter further contains a cyanine dye represented by the following formula (3) in an aggregated form exhibiting an absorption maximum in the wavelength region of 560 to 620 nm:

20



in which each of Z<sup>3</sup> and Z<sup>4</sup> independently is a non-metal atomic group forming a five-membered or six-membered nitrogen-containing heterocyclic ring which may be condensed; each of R<sup>3</sup> and R<sup>4</sup> independently is an aliphatic group or an aromatic group; L<sup>3</sup> is a methine chain consisting of an add number of methines; each of d, e and f independently is 0 or 1; and X<sup>3</sup> is an anion.

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12. A plasma display panel having a display surface covered with an optical filter, wherein the optical filter comprises a transparent support and a filter layer, said optical layer having an absorption maximum in each wavelength region of 300 to 390 nm, 560 to 620 nm, 750 to 850 nm, 851 to 950 nm and 951 to 1,100 nm.

13. The plasma display panel as defined in claim 12,  
10 wherein the optical filter is directly attached to the display surface.